Remarks

The undersigned's Remarks are preceded by related comments of the Examiner, presented in small bold-faced type.

> **5. Claims 1-44 were rejected under 35 U.S.C. 102(e) as being anticipated by Krishnamurthy (U.S. Patent 6,256,038 (1998)). Krishnamurthy teaches a method for creating a smooth parameterization and fitting it to an input surface in a 3-D computer graphics system comprising specifying a plurality of boundary curves on the surface that define a patch of the surface. The boundary curves are typically specified using a user-interactive curve editing procedure, but may also be specified automatically (abstract).**

The Examiner's rejection is respectfully traversed. As further explained below, Krishnamurthy does not disclose a method of manipulating control points as recited by the claims of the present application. Furthermore, contrary to settled law, in rejecting the present claims, what the examiner has done is to pick and choose phrases from Krishnamurthy that bear only a superficial resemblance to the recited claim elements and for which the Krishnamurthy reference fails to teach or suggest a combination as recited in the present claims. The Examiner has not shown that Krishnamurthy teaches combining of the chosen elements to effect the invention claimed in the present application. For at least these reasons, a rejection under § 102 is improper.

> **... Claim 1. A computerized method for manipulating a plurality of control points (column 51, lines 1-4)**

Although the Examiner, in his comments, asserts that col. 51, lines 1-4 teach "A computerized method for manipulating a plurality of control points" this is not the case. In fact, col. 51, lines 1-4 of Krishnamurthy does not teach any particular use of control points, but merely talks generally about "a computer implemented method for fitting a smooth surface to an input surface". The Examiner has provided no explanation as to how this relates to a "method of manipulating a plurality of control points" as recited by the claims of the present application. It is respectfully submitted that it is the Examiner's burden to show how what is cited relates to the language of the claims, and this has not been done.

> **... the plurality of control points forming a plurality of rows along two non-parallel directions U and V, the method comprising (column 8, lines 26-34 and column 10, lines 49-51)**

The Examiner further cites to col.8, lines 26-34 of Krishnamurthy as relevant to the teaching of "the plurality of control points forming a plurality of rows along two non-parallel directions U and V, the method comprising". This assertion is respectfully traversed. The cited text is understood as merely disclosing that certain curves may be represented by points in 3-D space. However, the cited text does not teach that these points are control points that can be adjusted as recited in claim 1 (i.e., to provide a smooth transition of rows of points), nor does the cited text teach that these points are arranged in a plurality of rows along two non-parallel directions. Contrary to the Examiner's suggestion, the cited text appears to be irrelevant to the

claim element requiring "the plurality of control points forming a plurality of rows along two non-parallel directions U and V". If the Examiner maintains the assertion that this material is relevant, the undersigned respectfully requests that the Examiner provide further explanation as to how the routine disclosure that points in 3D space can be used to represent a surface somehow teaches the different and much more specific use of "control points" as recited by claim 1. The undersigned respectfully submits that it does not.

Furthermore, with respect to the Examiner's cite to col. 10, lines 49-51 of Krishnamurthy as relevant to the teaching of "the plurality of control points forming a plurality of rows along two non-parallel directions U and V, the method comprising", it is respectfully submitted that although the cited text references a "(u,v)" this extract is taken out of context and does not disclose "the plurality of control points forming a plurality of rows along two non-parallel directions U and V" as recited by claim 1. Here, again, it is requested that if the Examiner maintains the assertion that the cited text of Krishnamurthy teaches or suggests the more specific and detailed element of claim 1, further explanation of, and objective evidence of, this teaching is requested.

> **... adjusting the position of a control point in an intermediary row in the U direction to provide a smooth transition from the row of control points corresponding to a first edge along the U direction to a row of control points corresponding to a second edge along the U direction; adjusting the position of the control point in an intermediary row in the V direction to provide a smooth transition from the row of control points corresponding to a first edge along the V direction to a row of control points corresponding to a second edge along the V direction (column 18, lines 50-67 and column 19, lines 1-6); and computing the new position of the control point based on the corresponding adjusted positions of the control point in the intermediary row in the U direction and the control points in the intermediary row in the V direction (column 21, lines 8-11 and lines 47-52).**

The examiner cites to col. 18, lines 50-67 and col. 19, lines 1-6 of Krishnamurthy as providing the above-cited teaching. The undersigned respectfully submits that it does not. The cited text of Krishnamurthy is understood as teaching particular parameterization rules for the creation of iso-curves. This is not what is recited by the referenced claim element.

Furthermore, the cited text appears to teach away from what is recited in claim 1. For example, the cited text of Krishnamurthy teaches that the "spring mesh spacing along a particular iso-curve should be uniform" (col. 19, lines 1 and 2). The effect of this teaching is that, in accordance with Krishnamurthy's method, all the surface points are impacted by Krishnamurthy's surface fitting technique, even the located at the edges or boundary curves of a surface. This is contrary to what is claimed in the present application. According to claim 1 of the present application, adjustment occurs to the position of the control points located in an intermediary row only, the edges remaining unmodified. In contrast, using what Krishnamurthy teaches and discloses, points from the edges of the surfaces in are modified (see, e.g., Krishnamurthy Figs. 3, 9).

In summary, as was explained above, it is respectfully submitted that Krishnamurthy does not teach or suggest all elements of claim 1 and, accordingly, claim 1 is patentable over Krishnamurthy. It is respectfully requested that the Examiner withdraw his rejection of the claim.

Claims 2-13 and 16 depend, directly or indirectly, on claim 1 and are patentable for at least the reasons stated with respect to claim 1.

Claim 17. A computerized method for manipulating a plurality of control points, the plurality of control points forming a plurality of rows along two non-parallel directions U and V, the method comprising: identifying a first row in the U direction corresponding to a control point (column 52, lines 1-3; column 29, lines 46-56 with figure 8; and column 33, lines 15-38); determining if a row of control points corresponding to a first edge along the U direction and the first row belongs in a first U plane; determining if a row of control points corresponding to a second edge along the U direction and the first row belongs in a second U plane (column 33, lines 15-38); and adjusting the control point using the first U plane and the second U plane, wherein the adjustment only occurs if the row of control points corresponding to the first edge along the U direction belongs in the first U plane and the row of control points corresponding to the second edge along the U direction belongs in the second U plane (column 33, lines 15-38).

The Examiner, in his comments, asserts that col. 33, lines 15-38 of Krishnamurthy teaches "adjusting the control point using the first U plane and the second U plane, wherein the adjustment only occurs if the row of control points corresponding to the first edge along the U direction belongs in the first U plane and the row of control points corresponding to the second edge along the U direction belongs in the second U plane" The undersigned has reviewed the cited text and it is respectfully submitted that this is not taught or suggested by the cited text. The cited text is understood as teaching the computation of intersections between curves in a u and a v direction. However, the cited text does not suggest what is claimed. For example, nowhere does the cited text teach or suggest adjusting control points using the first U plane and the second U plane, wherein the adjustment only occurs if the row of control points corresponding to the first edge along the U direction belongs in the first U plane and the row of control points corresponding to the second edge along the U direction belongs in the second U plane.

For at least the reason that the cited text does not teaching adjusting control points wherein the adjustment only occurs if the row of control points corresponding to the first edge along the U direction belongs in the first U plane and the row of control points corresponding to the second edge along the U direction belongs in the second U plane, claim 17 is patentable over the cited art. It is respectfully requested that the Examiner withdraw his rejection of the claim.

Claims 18-25 depend, directly or indirectly, on claim 17 and are patentable for at least the reasons cited with respect to claim 17.

Claim 28. A computerized method for manipulating a plurality of control points, the plurality of control points forming a plurality of rows along two non-parallel directions U

and V, the method comprising: identifying a first row in the U direction corresponding to a control point; determining if a row of control points corresponding to a first edge along the U direction and the first row belongs in a first U plane (column 52, lines 1-3; column 29, lines 46-56 with figure 8; and column 33, lines 15-38); determining if a row of control points corresponding to a second edge along the U direction and the first row belongs in a second U plane (column 33, lines 15-38); and constraining the control point using the first U plane and the second U plane, wherein the constraining only occurs if the row of control points corresponding to a first edge along the U direction belongs in the first U plane and the row of control points corresponding to the second edge along the U direction belongs in the second U plane (column 33, lines 15-38).

Claim 28 recites a method that includes adjusting control points and "constraining the control point using the first U plane and the second U plane, wherein the constraining only occurs if the row of control points corresponding to a first edge along the U direction belongs in the first U plane and the row of control points corresponding to the second edge along the U direction belongs in the second U plane".

It is respectfully submitted that Krishnamurthy fails to teach or suggest a method for manipulating control points where the control points are constrained if the row of control points corresponding to a first edge along the U direction belongs in the first U plane and the row of control points corresponding to the second edge along the U direction belongs in the second U plane. For at least the foregoing reason, claim 28 is patentable over the cited art.

Claims 29-36 depend, directly or indirectly, on claim 28 and are patentable for at least the reasons stated with respect to claim 28.

Claim 39. A computer system for manipulating a plurality of control points, the plurality of control points forming a plurality of rows along two non-parallel directions U and V, the system comprising: a computer, wherein the computer comprises a memory and a processor (column 52, lines 1-3; column 29, lines 46-56 with figure 8; and column 33, lines 15-38); and executable software residing in the computer memory wherein the software is operative with the processor to: adjust the position of a control point in an intermediary row in the U direction to provide a smooth transition from the row of control points corresponding to a first edge along the U direction to a row of control points corresponding to a second edge along the U direction (column 33, lines 15-38); adjust the position of the control point in an intermediary row in the V direction to provide a smooth transition from the row of control points corresponding to a first edge along the V direction to a row of control points corresponding to a second edge along the V direction (column 9, lines 27-50 and column 33 lines 15-38); and compute the new position of the control point based on the corresponding adjusted positions of the control point in the intermediary row in the U direction and the control points in the intermediary row in the V direction (column 33, lines 15-33).

Claim 39 is a system claim including system elements corresponding to those recited in claim 1. For at least the reasons stated with respect to claim 1, claim 39 is allowable over the prior art. It is noted that the Examiner, in rejecting claim 39, cites to Krishnamurthy at col. 9, lines 27-50 and column 33 lines 15-38 rather than col. 52 lines 1-3, column 29, lines 46-56 with

Figure 8; and column 33, lines 15-38 and column 33, lines 15-38 (as the Examiner did when rejecting corresponding claim 1). It is respectfully submitted that, although the cited text has changed, the Examiner still has not shown that Krishnamurthy anticipates claim 1. For example:

- The cited text does not disclose or suggest that "control points" form a plurality of rows along two non-parallel directions U and V.

- The cited text does not disclose or suggest that control points are adjusted while retaining the positions of control points in first and second edges. As further discussed with respect to claim 1, Krishnamurthy teaches away from this because Krishnamurthy's technique would cause points along edges to be altered.

For at least the foregoing reasons, claim 39 is patentable over the cited prior art. It is respectfully requested that the Examiner's rejection of claim 39 be withdrawn and the claim allowed.

Claim 40. A computer data signal embodied in a digital data stream for manipulating a plurality of control points, ,..

Claim 41. A computer system for manipulating a plurality of control points, ...

Claims 40 and 41 are independent claims that, contrary to the Examiner's suggestion, are not anticipated by Krishnamurthy. For example, as explained with respect to claims 1 and 39, Krishnamurthy, does not teach or suggest a method of manipulating control points in which control points are adjusted while control point positions along edges are retained (i.e., left unchanged). Because Krishnamurthy's method does not retain the positioning of points along edges, while the claimed invention does, it is respectfully requested that Krishnamurthy cannot be said to anticipate a method that does. For at least the foregoing reason, it is respectfully requested that the Examiner withdraw his rejection of claims 40 and 41 and allow the claims.

Claim 42. A computer data signal embodied in a digital data stream for manipulating a plurality of control points, the plurality of control points forming a plurality of rows along two non-parallel directions U and V, the signal comprising the steps of: identifying a first row in the U direction corresponding to a control point (column 1, lines 1- 26; column 29, lines 46-56 with figure 8; column 33, lines 15-38; and column 44, lines 54-67); determining if a row of control points corresponding to a first edge along the U direction and the first row belongs in a first U plane; determining if a row of control points corresponding to a second edge along the U direction and the first row belongs in a second U plane (column 33, lines 15-38); and adjusting the control point using the first U plane and the second U plane, wherein the adjustment only occurs if the row of control points corresponding to the first edge along the U direction belongs in the first U plane and the row of control points corresponding to the second edge along the U direction belongs in the second U plane (column 9, lines 27-50; and column 33, lines 15-38).

Claim 42 is a signal claim corresponding to method claim 17. As explained with respect to claim 17, claim 42 is patentable over Krishnamurthy for at least the reason that Krishnamurthy fails to teach or suggests adjusting control points using the first U plane and the second U plane, wherein the adjustment only occurs if the row of control points corresponding to the first edge along the U direction belongs in the first U plane and the row of control points corresponding to the second edge along the U direction belongs in the second U plane.

It is noted that, in asserting that Krishnamurthy discloses the recited adjusting "only ... if", element of claim 42, the examiner cites to col. 9, lines 27-50 of Krishnamurthy in addition to column 33, lines 15-38 (in rejecting the corresponding element of claim 17, the Examiner cited to col. 33, lines 15-38 but not to col. 9, lines 27-50). The undersigned has reviewed the newly cited section (i.e., col. 9, lines 27-50), and it appears that this section of Krishnamurthy, like col. 33, lines 15-38, also fails to teach or suggest adjusting control points using the first U plane and the second U plane, wherein the adjustment only occurs if the row of control points corresponding to the first edge along the U direction belongs in the first U plane and the row of control points corresponding to the second edge along the U direction belongs in the second U plane.

For at least the reason that Krishnamurthy fails to teach or suggest adjusting control points using the first U plane and the second U plane, wherein the adjustment only occurs if the row of control points corresponding to the first edge along the U direction belongs in the first U plane and the row of control points corresponding to the second edge along the U direction belongs in the second U plane, claim 42 is patentable over Krishnamurthy. It is respectfully requested that the Examiner withdraw his rejection.

Claim 43. A computer system for manipulating a plurality of control points, the plurality of control points forming a plurality of rows along two non-parallel directions U and V, the system comprising: a computer, wherein the computer comprises a memory and a processor (column 1, lines 1- 26; column 29, lines 46-56 with figure 8; column 33, lines 15-38; and column 44, lines 54-67); and executable software residing in the computer memory wherein the software is operative with the processor to: identify a first row in the U direction corresponding to a control point (column 1, lines 1-26 and column 33, lines 15-38); determine if a row of control points corresponding to a first edge along the U direction and the first row belongs in a first U plane (column 33, lines 15-38); determine if a row of control points corresponding to a second edge along the U direction and the first row belongs in a second U plane(column 33, lines 15-38); and the control point using the first U plane and the second U plane, wherein the constrain only occurs if the row of control points corresponding to a first edge along the U direction belongs in the first U plane and the row of control points corresponding to the second edge along the U direction belongs in the second U plane (column 9, lines 27-50; and column 33, lines 15-38).

Claim 44. A computer data signal embodied in a digital data stream for ....

System claim 43 and signal claim 44 each include limitations corresponding to those method claim 28. Claims 43 and 44, like claim 28, each recites "constraining" control points "wherein the constraining only occurs if the row of control points corresponding to a first edge along the U direction belongs in the first U plane and the row of control points corresponding to the second edge along the U direction belongs in the second U plane." As explained further with respect to claim 28, Krishnamurthy fails to teach or suggest constraining the positions of control points in accordance with the claimed conditions. For at least this reason, claims 43 and 44 are patentable over the cited art. It is respectfully requested that the Examiner withdraw his rejection and allow the claims.

Conclusion

Claims 1-13, 16-25, 28-36, 39-44 are now pending and believed to be in condition for allowance. Applicants respectfully request that all pending claims be allowed.

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Respectfully submitted,

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